

to identify persons, places, or things in discourse), is interesting—but will probably require determination for non-linguists.

The third and final section considers the role of language in cognitive development. Continuing from the work of Vygotsky and Whorf, these authors attempt to show that the functional demands of language not only influence linguistic development but influence cognitive development as well. In this view, cognition does not follow a set of logico-mathematical steps of increasing complexity in which language emerges when cognitive structures allow it to do so. Rather, cognition and language develop along different lines that cross early in childhood. Social demands prompt language development. Then, as linguistic competence proceeds, the structure of language becomes a scaffold for thinking. Four of the five chapters in this final section of the book present examples of how the functional theory can be studied. The study techniques presented are primarily observational—such as mother-child interaction during assigned puzzle construction, a child's narrative skill in a given story-telling task, or social interactions in naturalistic settings.

In summary, this volume is a collection of mostly theoretical essays concerning the mutual influence of thought and language. Since this matter is fraught with controversy, the authors have taken care to present other sides of the debate—specifically, Piaget's view. A strong point of the book is its careful tracing of the origin and evolution of the functional approach to language development. This historical discussion argues persuasively for the inclusion of pragmatics in language acquisition. Still, some readers may find the book one-sided or feel that the implications of social function on linguistic and cognitive development are overstated. Also, some chapters may prove to be arduous reading for a general audience in psychiatry and psychology. This possibility is unfortunate, since one of the aims of the volume was to promote interdisciplinary discussion of these issues. Those criticisms aside, this book provides a valuable and contemporary discussion concerning the interaction of cognition and language in human development.

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MATHEMATICAL ASPECTS OF HODGKIN-HUXLEY NEURAL THEORY. By Jane Cronin. New York, Cambridge University Press, 1987. 261 pp. \$49.50.

This book examines the seminal Hodgkin-Huxley equations (HH equations) from a rigorous mathematical perspective. The effort is an important one both for applied mathematics and for neuroscience.

The first part of the book is devoted to the evolution of the four-dimensional system of nonlinear ordinary differential equations. The author begins by framing the physiological problem and subsequently summarizing the important experiments that contributed to the derivation of the HH equations. She describes the current status of the equations and proceeds with a discussion of other mathematical models of nerve conduction, including the mathematically amenable FitzHugh-Nagumo (FN) equa-

tions and the stochastic model of Lecar-Nossal. Other models for myelinated nerve, striated muscle, and cardiac Purkinje fibers are also included.

The second part of the book delves, specifically, into the mathematical theory which is relevant to the HH equations and more generally to physiological problems such as nerve conduction. Cronin, a mathematics professor experienced in the field of mathematical biology, begins with a discussion of some fundamental issues such as existence, uniqueness, and stability of solutions. She continues with an interesting treatment of autonomous differential equations and their periodic solutions. The majority of this section, however, is devoted to the introduction and application of models of singularly perturbed systems, the FN equations serving as the primary example. Using that example, the author demonstrates the advantages of this approach for producing important qualitative explanations for such phenomena as refractory periods and anodal break excitation. She completes the book with a mathematical analysis of physiological models derived from voltage-clamp experiments, including brief references to cable theory and the full HH equations (which combine voltage-clamp equations and cable theory to produce a system of nonlinear partial differential equations).

I thoroughly enjoyed this book. It is complete, well written, and well organized. The physiological discussion is good and largely accurate, with the exception of one small error concerning firing frequency in the HH model. The mathematical discussions are concise and insightful with references to the proofs included, but not the proofs themselves. As a graduate student in the neuroscience program, I found this book to be the best synthesis on the subject that I have read to date. I highly recommend the work to researchers and graduate students in neuroscience, mathematics, and anyone interested in mathematical modeling of physical systems.

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FUNDAMENTALS OF ENDOCRINOLOGY. By W. Roy Slaunwhite, Jr. New York, NY, Marcel Dekker, Inc., 1988. 422 pp. \$45.00.

Fundamentals of Endocrinology is an introductory textbook designed for graduate, medical, and advanced undergraduate students. Dr. Slaunwhite, who teaches at SUNY-Buffalo, wrote it in response to his inability to find an adequate text for his students. The author is correct in stating that many of the existing books on this area slight the many "burgeoning and exciting discoveries regarding the biochemical aspects of endocrinology." With respect to this criticism, Dr. Slaunwhite has done an excellent job of presenting recent advances in this field in the form of an introductory text.

This volume is arranged differently from many other endocrinology textbooks. Rather than organizing by gland, Dr. Slaunwhite organizes his chapters by biological function (i.e., salt and water metabolism, fuel metabolism). The internal organization of the chapters is well done and should be of great assistance to the student. Each chapter begins with a biological overview; clinical aspects of the material are discussed at the end of each. In addition, relevant experimental techniques as well as current directions of research are discussed.

What is clearly conveyed in this book is Dr. Slaunwhite's excitement about